CLAIMS:

1. Optical information recording medium, comprising nano-elements selected from the group consisting of nanotubes and nanowires, said nano-elements being capable of emitting luminescent light.

2. Optical information recording medium according to claim 1, comprising a first and a second species of nano-elements, said species differing in:

a) luminescence wavelengths,

b) the orientation of the plane of polarization of luminescent light, or

c) both a) and b).

3. Optical information recording medium according to claim 2, wherein the two species further differ in the respective irradiation wavelength for inducing luminescence of the respective species.

4. Optical information recording medium according to claim 2, wherein the nano-elements are semi-conducting nano-elements.

5. Optical information recording medium according to claim 2, wherein the nano-elements of at least one species emit luminescent light in the range of visible wavelengths.

6. Optical information recording medium according to claim 2, wherein the two species are selected from the group consisting of InAs, GaAs, GaN, InP, CdSe, CdS, ZnS, ZnSe, ZnO, GaP, BN, $NiCl_2$, MoS_2, WS_2, SiC, Si and C nano-elements.

7. Optical information recording medium according to claim 2, wherein the nano-elements are single-walled nanotubes.

8. Optical information recording medium according to claim 6, characterized in that the nano-elements are carbon nanotubes.

9. Optical information recording medium according to claim 2, wherein the two species differ in composition.

10. Optical information recording medium according to claim 2, wherein the two species differ in diameter.

11. Optical information recording medium according to claim 2, characterized in that the first and second species of nano-elements further differ in the orientation of the plane of polarization of light absorbed by said nano-elements.

12. Optical information recording medium according to claim 2, characterized in that it comprises first and second type locations, said first type locations comprising nano-elements of the first species and being essentially devoid of nano-elements of the second species, and said second type locations comprising nano-elements of the second species, and being essentially devoid of nano-elements of the first species.

13. Optical information recording medium according to claim 12, characterized in that the first and second type locations are arranged in first and second type tracks, respectively, each first type track comprising first type locations and being essentially devoid of second type locations, and each second type track comprising second type locations and being essentially devoid of first type locations.

14. Optical information recording medium according to claim 12, further comprising a first type information layer for carrying an information, said first type information layer comprising first type locations and being essentially devoid of second type locations, and a second type information layer for carrying an information, said second type information layer comprising second type locations and being essentially devoid of first type locations.

15. Optical information recording medium according to claim 14, characterized in that for each location of an information layer, all neighbour locations of neighbour

information layers are essentially devoid of nano-elements emitting light absorbed by the nano-elements of the location in question.

16. Optical information reading device for reading information from an optical information recording medium according to claim 1, comprising

a) a light source for irradiating a first location on said optical information recording medium with polarized light of a first orientation of the plane of polarization and a first wavelength,

b) detector means for generating a first intensity signal corresponding to the intensity of luminescent light emitted by a first preselected species of nano-elements.

17. Optical information reading device according to claim 16, wherein the detector means comprise filter means for selectively measuring the intensity of luminescent light of a preselected second wavelength and/or orientation of the plane of polarization.

18. Optical information reading device according to claim 16, wherein the detector means are equipped to differentiate between polarization-isotropic and polarization-anisotropic luminescence.

19. Optical information reading device according to claim 16, wherein the detector means are equipped to detecting the intensity of luminescent light of two wavelengths.

20. Optical information reading device according to claim 16, wherein the light source is equipped to emit light of at least two wavelengths.

21. Optical information reading device according to claim 16, wherein the detector means are additionally equipped to simultaneously generating a second intensity signal corresponding to the intensity of luminescent light emitted by a second preselected species of nano-elements.

22. Optical information reading device according to claim 16, wherein the light source comprises means for selecting the orientation of the plane of polarization of the irradiating light.

23. Optical information reading device according to claim 16, further comprising:

c) movement means for irradiating a second location on said optical information recording medium with said beam of polarized light, and

d) comparator means for determining a change in the first intensity signal generated upon irradiating said first location and the first intensity signal generated upon irradiating said second location.

24. Method of reading information from an optic information reading medium according to claim 2, comprising the steps of:

a) irradiating a first location on said optical information recording medium with polarized light of a first orientation of the plane of polarization and a first wavelength,

b) generating a first intensity signal corresponding to the intensity of luminescent light emitted by a first preselected species of nano-elements.

25. Method of reading information according to claim 24, wherein step b) comprises selectively measuring the intensity of luminescent light of a preselected second wavelength and/or orientation of the plane of polarization.

26. Method of reading information according to claim 24, wherein step b) comprises differentiating between polarization-isotropic and polarization-anisotropic luminescence.

27. Method of reading information according to claim 24, wherein step b) comprises detecting the intensity of luminescent light of two wavelengths when a first location on the optical information recording medium is irradiated with polarized light.

28. Method of reading information according to claim 24, wherein step a) comprises selecting the first wavelength from at least two wavelengths.

29. Method of reading information according to claim 24, wherein step b) further comprises simultaneously generating a second intensity signal corresponding to the intensity of luminescent light emitted by a second preselected species of nano-elements.

30. Method of reading information according to claim 24, characterized in that in step a) the first location is selectively irradiated with light of a preselected plane of polarization.

31. Method of reading information according to claim 24, further comprising the steps of:

c) irradiating a second location on said optical information recording medium with said beam of polarized light, and

d) determining a change in the first intensity signal generated upon irradiating said first location and the first intensity signal generated upon irradiating said second location.

32. Method of producing an optical information recording medium according to claim 1, comprising the steps of:

a) applying a first pattern of a masking agent onto the surface of a carrier member for carrying nano-elements, then

b) applying nano-elements of a first species of nano-elements onto the surface of said carrier member, where the surface is essentially devoid of said masking agent, then

c) applying a second pattern of a masking agent onto the surface of a carrier member for carrying nano-elements, then

d) applying nano-elements of a second species of nano-elements onto the surface of said carrier member, where the surface is essentially devoid of said masking agent.

33. Production method according to claim 32, characterized in that between steps b) and c), an additional carrier layer is applied on the surface of the carrier member, to spatially separate the nano-elements of the first and second species.